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GUIDELINES  
  
FOR THE  
  
TREATMENT AND DISPOSAL OF  
  
HAULED LIQUID INDUSTRIAL WASTES  
  
IN  
  
ONTARIO

DECEMBER, 1978



Ministry  
of the  
Environment

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## STATEMENT OF INTENT

These guidelines indicate, for various categories of hauled liquid industrial wastes, alternative methods of treatment and disposal which the Ministry believes are appropriate to ensure the continuing protection of the environment in Ontario. They represent a compilation of known information and practices to date but reflect the intention of the Ministry to prohibit the direct landfilling of untreated hauled liquid industrial wastes in the future.

Other treatment and disposal processes not incorporated into these guidelines may be used subject to approval by the Ministry of the Environment.

These guidelines are intended to serve as a basis for regulations which the Ministry intends to promulgate under The Environmental Protection Act. Comments on any aspect of these guidelines from waste generators, waste haulers, disposal site operators, trade associations, municipalities and any other interested persons will be welcomed.

Comments should be forwarded no later than  
March 31, 1979 to:

The Director  
Waste Management Branch  
Ontario Ministry of the Environment  
4375 Chesswood Drive  
Downsview, Ontario  
M3J 2C2

## GUIDELINES FOR THE TREATMENT AND DISPOSAL OF LIQUID INDUSTRIAL WASTES IN ONTARIO

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### 1. APPROVALS

Only those waste treatment and disposal processes or sites which have received a Certificate of Approval from the Ministry of the Environment may be used for the treatment and disposal of hauled liquid industrial wastes. Approved waste treatment and disposal processes should not be used to treat wastes other than those specified in the approval without obtaining further approval from the Ministry.

### 2. ON-SITE DISPOSAL

On-site disposal of hauled liquid industrial wastes is not acceptable except where specific approval for the wastes to be disposed and for the disposal method(s) to be employed has been obtained from the Ministry.

### 3. LANDFILLING

Untreated hauled liquid industrial wastes should not be deposited into municipally-owned or privately-owned sanitary landfills except where provided for in these guidelines.

4. EXEMPTIONS

Wastes covered by other regulations and guidelines are exempted from these guidelines. Such wastes include:

- septic tank wastes;
- septage from holding tanks;
- sludges from domestic sewage treatment plants;
- agricultural wastes (eg., manure);
- PCB wastes;
- Pesticides;
- wastes from mining and milling operations.

Additional exemptions:

- waste slags from metallurgical operations.

5. ALLOWABLE TREATMENT AND DISPOSAL

Table 1 indicates the recommended treatment and disposal processes for various categories of hauled liquid industrial wastes.

Although alternative treatment and disposal processes are listed for many of the waste categories, specific wastes may not be amenable to treatment and/or disposal by each of the alternatives listed. For this reason, these guidelines should be used with care.

TABLE 1

WASTE DESCRIPTION	WASTE CLASSIFICATION	TREATMENT AND/OR DISPOSAL
<u>A. ORGANIC WASTES</u>		
1. "Rich" Organic liquids	202-209 302-304	- recovery and re-use - reclamation - incineration
2. "Lean" Organic liquids	201-209 302-304	- recovery and re-use - reclamation - incineration - physical/chemical - biological - deep well disposal - wet air oxidation (WETOX) - solidification
3. Organic sludges and solids	202-209 301-304	- wet air oxidation (WETOX) - incineration - secure landfill - sludge farming - biological treatment - land disposal
4. Organic sludges - Plant & animal based	401	- As in A(3) - land disposal - sanitary landfill (Approval of MOE or owner required)
<u>B. INORGANIC WASTES</u>		
1. Inorganic liquids	101-106	- recovery and re-use - physical/chemical - deep well disposal - solidification

WASTE DESCRIPTION	WASTE CLASSIFICATION	TREATMENT AND/OR DISPOSAL
2. Inorganic sludges and solids	101-106	- solidification - secure landfill
3. Inert inorganic sludges and solids	402	- sanitary landfill (Approval of MOE or owner required) - land disposal
<u>C. OIL/WATER MIXTURES</u>		
1. Oil and water	201	- emulsion breaking - oil separation - electro chemical
a) oil phase		- As for waste oil, D below
b) water phase		- As in A(2) - municipal sewer system
c) sludge phase		- incineration - solidification - sanitary landfill (Approval of MOE or owner required) - land disposal
2. Oil interceptor and grit chamber clean out	201	- secure landfill - sanitary landfill (Approval of MOE or owner required) - land disposal
<u>D. WASTE OILS</u>		
	202	- recovery and re-use - reclamation - incineration - road oiling - fuel for cement kiln

WASTE DESCRIPTION	WASTE CLASSIFICATION	TREATMENT AND/OR DISPOSAL
<b>E. <u>SPECIAL WASTES</u></b>		
1. Caustic phenolates and sulphides from petro-chemical processing	290	- reclamation - incineration - deep well disposal - chemical oxidation
2. Chromium hexavalent	103	- chemical reduction to trivalent state then as in B(1) or B(2)
3. Cyanides	104	
a) solutions 100 ppm $\text{CN}^-$		- alkaline chlorination - electrochemical oxidation then as in B(1) or discharge to municipal sewer - incineration
b) solids		- incineration - secure landfill
4. Halogenated organics	204 205 209 302 304 290	- incineration
5. Industrial brines	190	- deep well disposal - as recommended by MOE
6. Mercury and its salts	190	- solidification - secure landfill
7. Semi-metals and compounds	190	- secure landfill - solidification
- arsenic		
- antimony		
- boron		
- selenium		



WASTE DESCRIPTION	WASTE CLASSIFICATION	TREATMENT AND/OR DISPOSAL
8. Radioactive wastes		- to be reviewed with MOE and may be subject to Atomic Energy Control Board regulations
9. Tank truck washing wastes	(all)	- as recommended by MOE
10. Other wastes		- as recommended by MOE

DEFINITIONS

1. GENERAL

- a) "Hauled Liquid Industrial Wastes" means those wastes generated by manufacturing or processing operations which are hauled away from the place where they are generated to another location, either off-site or on-site, for treatment and/or disposal. For the purposes of these guidelines, "hauled liquid industrial wastes" include industrial waste sludges, semi-solids and solid wastes.
- b) "Off-site" means at a site other than the property owned by the company where the manufacturing or processing operations which generate the wastes are located.
- c) "On-site" means within the property boundaries associated with the manufacturing or processing operations which generate the wastes.
- d) "Liquid" means that the waste is in the liquid or fluid state under normal conditions, can be pumped and must be contained in a suitable vessel.
- e) "Sludge" means a mixture of liquids and solids which will flow under normal conditions and can be pumped using standard pumping equipment or vacuum equipment.

- f) "Solid" means solid or a mixture of solids and liquids which will not flow under normal conditions and which cannot be pumped using standard pumping equipment.

2. WASTES

- a) "Rich Organic" means organic wastes having a total organic carbon content of greater than 5 percent ( $\text{TOC} > 5$  percent). Such wastes would normally contain sufficient BTU value to sustain combustion.
- b) "Lean Organic" means organic wastes having a total organic carbon content of less than 5 percent ( $\text{TOC} < 5$  percent). Such wastes would not normally sustain combustion and would require supplementary heat for complete combustion.
- c) "Halogenated Organics" means organic compounds containing chlorine, bromine, iodine or fluorine but primarily relates to chlorinated organic compounds.
- d) "Organic Sludges - Plant and Animal" means organic sludges resulting from manufacturing or processing operations involving animals or parts of animals, plants, vegetables or fruits. These wastes will generally be associated with the food and beverage industries, animal and fish processing plants and tannery operations.

e) "Inorganic" means solutions or aqueous mixtures composed primarily of inorganic compounds but which may contain traces of organic contamination.

f) "Inert Inorganic" means inorganic wastes which are not expected to change significantly under the conditions to which they will be exposed in the landfill. Approval is required from the Ministry to dispose of in a landfill other than a secure landfill any such wastes that contain in excess of 100 ppm (on an "as received" basis) of individual metals or semi-metals that are known to present special dangers to health or to the environment. These include:

antimony	lead
arsenic	mercury
boron	nickel
cadmium	selenium
cobalt	tin
copper	vanadium
	zinc

g) "Industrial Brines" means aqueous solutions of inorganic compounds having dissolved solids contents of greater than 1 percent (10,000 ppm).

3. TREATMENT AND DISPOSAL

a) "Sanitary Landfill" means a landfill constructed for the primary purpose of burying domestic and commercial refuse and garbage.

- b) "Secure Landfill" or "Secure Chemical Waste Landfill" means a landfill constructed for the disposal of chemical wastes in accordance with the regulations and guidelines of the Ministry of the Environment.
- c) "Biological" treatment means any of the biological treatment systems currently in use for the biochemical oxidation of organic materials.
- d) "Deep Well Disposal" means pressure injection of wastes into approved geological formations.
- e) "Land Disposal" means direct application onto land using methods approved by the Ministry of the Environment.
- f) "Incineration" means incineration in an approved waste incinerator.
- g) "Physical/Chemical" means any one or combination of a number of unit operations commonly employed in the treatment of wastes and include:
- |                          |                               |
|--------------------------|-------------------------------|
| - emulsion breaking      | - neutralization              |
| - chemical precipitation | - solids removal & thickening |
| - chemical oxidation     | - carbon absorption           |
| - ion exchange           | - reverse osmosis             |
| - ultra filtration       | - electro chemical processes  |

- h) "Recovery and Re-use" means where wastes are segregated and directed for re-use either on-site or off-site, and may include minor pre-treatment such as separation of organic and inorganic phases or separation of solids and liquids.
- i) "Reclamation" means the recovery of a usable product from a waste following extensive pre-treatment such as distillation, chemical treatment, re-refining, etc.
- j) "Solidification" or "Chemical Fixation" means any one of a number of processes by which liquid wastes are converted into stable solid products or encapsulated in a manner which prevents their release to the environment.
- k) "Sludge Farming" means a process whereby waste sludges are spread onto land, disced into the soil, nutrients are added and the deposited sludges are turned at frequent intervals to ensure continuing bacterial decomposition of the wastes.



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